

REMARKS

The Office Action dated June 23, 2008 has been carefully considered. Claim 5 was rejected on §112 grounds while claims 1-4 and 6-7 were rejected on prior art grounds. By way of this amendment, claims 6-7 have been canceled without prejudice; claim 5 has been amended and claims 8-27 have been added. Applicant respectfully requests reconsideration in view of the foregoing amendments and the following remarks.

A. The §112 rejections

Relative to claim 5, Applicant has amended this claim by eliminating the term "curve". This extraneous word did not have an impact on the claim. As a result, and considering no prior art rejections are advanced against claim 5, a notice of allowance for claim 5 is respectfully solicited.

B. The Prior Art Rejections

(1) Summary of the Present Application and claims

Prior to detailing specifically the shortcomings of the prior art rejections and/or new claims that have been added to further distinguish the prior art and more comprehensively provide coverage as to the flexibility distinction, Applicant first will explain the importance of claims 1 through 5 and how the present invention is distinguished over the art. This is particularly germane because such accuracy and precision issues in a game requiring accuracy and precision is not that straightforward and not a matter of obviousness, particularly for the dimensional limitations claimed. In this regard, the non-linearity of the taper (e.g. see curved profile shown in FIG. 6 for example) is used to improve upon accuracy and precision.

The flexibility that is required for a low deflection cue is a shaft which flexes out far (in other words: a shaft that bends with a wide angle) and fast enough (in other words: the distance from the tip end to the bending point has to be short). The closer

to the tip the shaft starts bending, the wider the angle under which it will bend and also the quicker it will bend. If it would be a longer part of the shaft that would bend following the impact with the ball, then this would mean that (1) the angle under which the shaft would bend would be smaller and (2) that the time interval under which the shaft starts to bend would be too long in duration.

Therefore, part of the invention is to be found in the fact that the cue shaft of the present invention is forced to bend out close to the tip end (fast) and with a wide angle (far). This is obtained by rapidly increasing the diameter of the shaft from about six inches from the tip end. In other words, by quickly building up mass so that further on the shaft becomes rapidly far less flexible than those first six inches of the shaft. Fig. 6 of the present application, shows how the diameter of both embodiments of the snooker cue and pool cue start to increase markedly from about 6 inches from the tip end, as compared to before that distance, and only becomes higher than the diameter of normal linear tapered cue from about 14 inches on.

In the description of Fig. 6 it is stated that: "as from about 35 cm (about 14 inch) from the tip end, the diameter is higher than with the normal linear cue tapering." Further on in the detailed description of the invention, Applicant stated in paragraph 26 that: "It has been found that the flexibility of the cue shaft towards the tip end has a great impact on the angle δ of deflection caused by the cue on the cue ball."; and in paragraph 31 that "The most important part of the shaft is the end near the tip. The flex of this part plays an important role in the reduction of throw and deflection. Due to the gradual non-linear change of the diameter, a more flexible tip is obtained..."

The importance of building up mass close to the tip end and in a substantial way, explains why the current standard pool cues with a large tip end of 12-13 mm followed by a linear non tapered section (or no significant tapering) for about 15 inches, followed by a relatively high tapering section of about 4 inches, followed by a linear tapering up to the butt end are amongst the highest deflecting cues that exist (see description of such a cue in §7). That entire linear non tapered section is bound

to bend (too slow and with an angle that is too small). Nevertheless, the marketplace (and hence players) want pool cues with such large tip ends, so the inventors came up with a solution for such cues with a tip end that is far too large in comparison with the balls played. The Applicant did this by quickly building up the mass of the shaft starting at about 5-6 inches from the tip end in order to ensure that only this first section of the shaft will bend upon the impact. As to where exactly this should happen depends on the diameter of that thick tip end.

Applying this principle to such a cue can be done by starting from the tip end with a linear non-tapered section as is standard for such cues, but then stopping with that section and replacing it with the Applicant's S-curve where the diameter values (that are calculated starting from a normal sized tip end given the weight of the ball played) cross the diameter value of that linear non tapered section (see the crossing point of Fig. 6).

The result is that cues according to the present description build up mass more quickly than a standard cue with such a large tip end and thus still force this cue, notwithstanding its larger tip end and thus bigger diameter at the tip end, to bend at this distance and so the Applicant still forces it to bend faster and with a wider angle as compared to the standard cue with such a broad tip. In short, it will still be less deflective than such a standard cue with a large tip end.

With this understanding, further attention can now be had to the prior art rejections and why they fail to meet the claims from novelty. It is believed the above explanation however should be quite helpful in reconciling why the claims are not obvious.

(2) The anticipation rejections of Claims 1 & 4 over Le Fiell

According to MPEP § 2141, anticipation is only proper if each and every claim limitation is satisfied in a single prior art reference. It is submitted that standard is not satisfied by La Fiell relative to claims 1 and 4..

According to the Office Action, Fig. 3 of Le Fiell shows the non-linear nature of Le Fiell's tip end, and as a result, relative to a particularly sized cue tip end Le Fiell's tip end will have a reduced diameter and an increased flexibility.

To begin with, Le Fiell is describing a cue shaft in metal (consider new dependent claim 10), whereas metal is much stiffer (read: far less flexible) than wood and, as a result, causing the cue ball to deflect even more than what would happen with a standard cue.

More germane to the language of claim 1, Le Fiell's patent is dealing with the smoothness of a cue shaft's surface. More precisely, he is dealing with it on a microscopic level (emphasis added):

- His brief description of the drawings states already that Fig. 3 is a “highly magnified fragmentary longitudinal sectional view...”.
- Halfway in column 3 of his description of the preferred embodiment, one can read: “The result of this grinding operation is to practically cover the external surface of the guiding section **28** of the body **30** with close parallel ridges and valleys **31** which are microscopically enlarged in the diagrammatic cross-sectional view of Fig. 3.”
- Halfway in column 4, one can read: “As indicated in Fig. 2, the depth of the ridges and valleys **31** (or the pock produced by the shot peening guiding section **28**) best perform their function above described when they came within the preferred range of 20-25 R.M.S. (root mean square). If much finer than this range, said scratches or pocks are noticeably less effective in producing the pneumatic lubricating film. If coarser than this range, said scratches or pocks render the guiding section **28** objectionably rough.” Le Fiell continues to elaborate on this RMS thereby referring to measurements in “micro-inches” (0,000001 inch)

All of this is confirmed when looking at the section between the numbers 3 and 3 on Fig. 2, this is the section from where the cross-sectional view of Fig. 3 has to be situated. Between numbers 3 and 3 one can see the same linear tapered line of the shaft as before and after that section.

In other words, Le Fiell's non-linearity is to be found on the microscopic level as a matter of surface roughness, whereas for the eye it seems to be a perfectly linear tapered line.

According to Applicant, any standard cue is non-linear on the microscopic level. The invention claimed by Le Fiell is a particular pattern within a preferred range that is to be found on the microscopic level and that differs from the ones that might be expected on a standard cue. Accordingly, it is respectfully submitted that "a non linear tapered section" is not satisfied. Surface roughness, is not the same section, in accordance with the present invention.

However, as a back-up position, Applicant has also added new dependent claims to further distinguish La Fiell. The Examiner's additional attention is directed to these dependent claims that even further distinguish La Fiell.

(3) The obviousness rejections of Claims 2 & 3 over Le Fiell

Although Le Fiell does not disclose the exact dimensions of his non-linear cue, according to the Office Action, they nevertheless appear to be in the order of that claimed by Applicant, and that absent a showing of unexpected results it would have been obvious to one of ordinary skill in the art to have varied the dimensions of Le Fiell's stick.

Indeed, from the above and such paragraphs, such as paragraph 31, these claimed limitations relative to claims 2 and 3 are indeed directly relevant to the advantages of the invention and particularly to flexibility. Indeed, in addition to what is stated above about Le Fiell's non-linearity on the microscopic level, no-one skilled in the art would feel tempted to expand Le Fiell's pattern to a bigger level that could be seen with the naked eye, because this would have the effect of a saw on the fingers of the player, just as stated by Le Fiell. The Examiner's proposed modification of Le Fiell would not make sense.

Moreover, it is not seen what on Le Fiell's Figs. 1 & 2, or in his description, or in his claims makes the Examiner think that the dimensions of Le Fiell's cue would be in the order of those claimed by the Applicant. Le Fiell's Fig. 2 is a full length plan view of his cue as it can be seen with the naked eye. When comparing it with his Fig. 1 which depicts a conventional manner of employing a billiard cue, one cannot find

any non-linear section starting from the tip end. Neither can one deduce from those two drawings that any part of Le Fiell's cue's guiding section in Fig. 2 would have a reduced diameter and/or section with an increased diameter as compared to an ordinary linear tapered cue. All one can see is a perfectly linear tapered shaft from the tip end till the butt end. Something which is corroborated by what is written by Le Fiell according to the excerpts below.

- Description of a standard cue (as depicted in his Fig. 1):

"A conventional billiard cue **13**... has at its butt end a relatively thick driving section **14** from which the diameter of the cue tapers down to a minimum value where the cue terminates at the impact or tip of the cue in a guiding section **15** which terminates in a conventional cue tip... The guiding section **15** is usually about one foot in length and about one half inch in diameter..."

Given the fact that the entire cue tapers down from butt end till tip end, this can only mean that a conventional billiard cue's guiding section will somewhere have a diameter of half an inch.

- Description of the cue invented by Le Fiell:

"...a cue is shown in Fig. 2 which may conform precisely in external contour... to the conventional billiard cue 13 but the cue **25** is preferably formed with a tapering tubular body... The cue **25** includes a butt or driving section..., and a shaft or guiding section **28** which may be considered as including the other half of said cue between line **26** and a cue tip **29**..."

This reading that Le Fiell's cue is for the naked eye, a conventionally shaped cue that tapers down linearly from butt end till tip end is confirmed in Le Fiell's first product claim (claim 4): "A billiard cue body comprising a tapered thin walled metallic tube including a thicker driving section at the butt end of said cue and a guiding section of diminished diameter at the impact end of said cue..."

The diminished diameter Le Fiell is referring to for his guiding section is in comparison with the thicker driving section of that very same cue, and not in comparison with the guiding section of a conventional cue.

Therefore, no-one skilled in the art would feel inclined to vary with the dimensions of Le Fiell's cue on the level of the naked eye, simply because on that level, Le Fiell's cue is nothing more than a conventional cue.

(4) The anticipation rejections of Claims 1 & 4 over Russell

According to the Office Action, both these claims are being anticipated by Figs. 2A through 2D which show the non-linear nature of the taper of Russell's tip end. According to the Office Action, this would imply a reduced diameter and thus increased flexibility of Russell's tip end as compared to an ordinary cue tip end. It is not seen that Russell has any impact on the patentability, other than perhaps a superficial reading which is addressed below.

Given that the claims, including claim 1, all refer to the "diameter" of the shaft over the "non-linear tapered section", it is clear that what is claimed by Applicant is a circular shaped cue shaft. Only a circle can define a diameter. As such, no such diameter is seen in Figs. 2B-2D referenced in the Office Action.

However, it is pointed out that new dependent claim 9 (and new independent claim 14), additionally specify "circular" such that the Examiner's additional attention is directed toward these claims.

(5) The obviousness rejections of Claims 2 & 3 over Russell

According to the Office Action, Applicant's "non-linear tapered section with reduced diameter extending until about 14 inches from the tip end" and Applicant's "non-linear tapered section with increased diameter extending from about 14 inches from the tip end to about 29 inches from the tip end" (of a standard sized cue) lack non-obviousness, because one skilled in the art might have varied the dimensions of the Russell shaft.

As previously mentioned in relation to Le Fiell and section 1 above (e.g. such paragraphs such as paragraph 31 of the application), these claimed limitations relative to claims 2 and 3 are indeed directly relevant to the advantages of the invention and particularly to flexibility

In this regard, it is not seen that Russell teaches or discloses any of the limitations of claims 2 and 3. Given that Russell is directed toward a total different

structure with flats (e.g. not a curved surface that is non-linear for flexibility reasons), it is not seen that eliminating flats would make sense. Accordingly it is not seen how obviousness is arrived particularly absent any teaching or rationale in the art absent Applicant's disclosure.

(6) New Claims 14-18

To provide more comprehensive coverage, a new independent claim set of claims 14-18 is directed toward the relative flexibility aspect (see e.g. Summary section) that is achieved by the diameter variance disclosed and discussed in detail in the application. This is clearly illustrated for example in FIG. 6 and the discussion related thereto in the specification (note that diameter increases more quickly in FIG. 6 starting at about 6 inches and may reach a diameter larger than a traditional tapered cue at about 14 inches). Claim 14 discusses the aspect of a first portion that has a diameter that increases "at a slower rate per unit length" and a second portion that "increases at a faster rate per unit length". This is not disclosed or taught anywhere in the art and therefore allowance of these claims is solicited.

(7) New Claims 19-23

In a similar vein, claims 19-23 have been added that are directed toward the flexibility aspect as a result of the mass characteristics of such a cue. These claims focus on the flexibility aspect and distinction relative to standard tapered cues of circular cross sectional profile at the relevant location. However, in these claims, the focus is on the more flexible front section followed by a mass build-up section (note that mass increases more quickly in FIG. 6 at about 6 inches and may reach a diameter larger than a traditional tapered cue at about 14 inches). Due to the advantages of the flexibility aspect, these claims are also patentable and define over the prior art of record. The relative "flexibility" is emphasized in the specification and tied to how much material is used. For example, in the summary section, first paragraph it is

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recited "the reduced diameter gives an increased flexibility to the tip end, which results in low deflection when a ball is struck off center" and further "the shaft can have a non-linear tapered section with increased diameter from about 14 inches from the tip end to about 29 inches from the tip end" (in this regard, see e.g. claim 20). It is axiomatic that the diameter differences is a way to affect relative mass and hence flexibility as claimed (also see how mass rapidly increases starting at about 6 inches in FIG. 6 in relation to claim 19). For the foregoing reasons, allowance of these claims is solicited.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Extension of Time and Fee Deficiency

Applicant believes that a one month extension of time is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition and fee for extension of time. If any additional fee is required, or any overpayment is made, in connection with this communication please charge or credit deposit account No. 50-3505.

Respectfully submitted,

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